



ICM

JUNE 2016

SYSTEMS ANALYSIS

Instructions to candidates:

- a) Time allowed: Three hours (plus an extra ten minutes' reading time at the start – do not write anything during this time)
- b) Answer any FIVE questions
- c) All questions carry equal marks. Marks for each question are shown in []
- d) Mark allocation should determine the length of your answer and the time you spend on it. Generally one mark is awarded for every valid point you make
- e) Read each question through fully before starting any part of it
- f) Ensure that you pay particular attention to words underlined, in CAPITALS or in **bold**. FEW OR NO MARKS will be awarded to any question where these are ignored
- g) No computer equipment, books or notes may be used in this examination
1. a) A company that produces bespoke furniture currently uses a computer system but much of the work is still done on paper, for example orders are hand-written, then transferred to the computer later. The requirements of the orders are printed out and taken to the production department and when an order is complete the paperwork is collected from the production manager and entered into the system so that an invoice can be produced. The company needs to update its computer system and has contracted a systems analyst to help them decide how to proceed.
- i The systems analyst will need to find out as much as possible about the existing system and what the new system is to achieve. Describe the methods he/she will use to do this. [8]
- ii The analyst will present the findings of the investigation to the management in the form of a report. Explain what the contents of this report might be. [6]
- iii What possible courses of action might be taken once the report has been analysed? [6]
2. a) Explain the purpose of a decision table. [4]
- b) Draw an EXTENDED decision table that will enable the cost to be determined of taking a family and its car on a car ferry. The following charges apply:
- £50 is charged for the car (including its driver) provided the car is no more than 4m long
 - An additional charge of £25 is made for cars exceeding 4m
 - Additional adult (aged 18+) passengers are charged £15 each
 - Children (aged 4+) pay £10
 - Young children (under 4 years) go free
 - Cars pulling any form of trailer are charged £5 per metre length of the trailer [10]
- c) List the advantages and disadvantages of using decision tables to record information gained during an investigation by a systems analyst. [6]
3. Freshfields is a small charitable organisation that looks after abandoned pets. The charity tries to find new homes for the animals but those that can't be re-homed are looked after at one of the charity's two centres. The charity relies on donations from the public and also money raised in their shop. The charity needs to keep detailed records of all the animals it deals with including medical conditions and background/history. They also have to store details of their sponsors and also people who want to 'adopt' a pet. Their main office needs access to the transactions at the shop and also to the records at the two residential centres.
- Discuss in detail the use of computers in Freshfields. In particular, state the main tasks performed by the computer. Your answer should also include:
- the type and quantity of computer equipment
 - how and when data is captured
 - outputs from the system either on paper or on screen
 - particular uses made of the system by different people within the organisation
 - details of the files needed, including content, organisation and methods of access [20]

continued overleaf

4. a) Explain why system controls are necessary when a new computer system is being developed. [6]
 b) Explain why documentation for the eventual user of a program or package is likely to be different from that used by the maintenance programmer. [4]
 c) Identify FIVE major items which would be part of the USER documentation and for EACH explain why the user might need them. [10]

5. Testing is a crucial part of the development of a new system. This testing takes place at different levels and at different times. Discuss FOUR different types of testing that could take place. For EACH, explain:
- **when** in the development process the testing occurs
 - **who** would be involved
 - **how** each test is checked and verified as being satisfactory before the next process is tested [5 each]

6. A high street **clothing** store also sells its items online. Customers can choose to have orders delivered to their home or collect at their nearest store. Delivery costs £4 GBP per order but collection is free.
- a) Specify TWO fields that the online order form should contain to ensure that customers receive the exact items that they require. [2]
 b) Name TWO data items that would appear **automatically** on the order form. [2]
 c) Design a FULL-SIZED order form using a whole page of your answer book and include at least THREE example ordered data items. A perfectly neat order form is not expected but it must contain sufficient information and have a suitable layout to be workable in the real world in order to gain full marks. [6]
 d) The orders file is processed every day at 2:30pm. Items requiring collection in store are packed and dispatched the same day to ensure they reach the store on time. Describe the process of separating the 'collection' orders from the 'standard delivery' orders. [5]
 e) The table below shows an example of one field that would appear in the STOCK file for the clothing store. Add FIVE more fields to the table. Each REASON should identify briefly why the data item is needed and how it would be used. [5]

| Field name | Data type | Example | Reason for being on the file |
|-------------|--------------|-----------|---|
| ProductCode | AlphaNumeric | L14TOP123 | Unique identifier showing department – L (ladies) Size – 14 Item type – Top Style number – 123 |

7. Draw a system flowchart for the following scenario:
- A shop specialising in picture framing uses a computer system to manage its orders. Customers can order custom frames and mounts for paintings, prints or photographs. Mount board comes in a range of TEN different colours stored at the shop. Frame moulding is ordered as required from an external supplier. New customer details are entered into the customer file before an order can be placed, existing customer details are displayed on the screen and the customer verifies that the information is up-to-date before the order can be placed. Details of customer requirements are entered into the system, these details consist of:
- Measurements for the mount
 - Measurements for the frame
 - Colour of mount
 - Stock code for type of frame
- Mount board stock is checked and re-ordered if necessary. A check is made with the frame supplier to ensure that the required length of frame moulding is available. If the moulding is unavailable a report is displayed on the screen and the current order cannot be completed. If the order can be processed the details are written to the orders file. The cost is calculated and payment is taken. The payments file is updated and an invoice is printed for the customer. [20]

8. a) Data files may be organised in one of the following ways:
- Sequential
 - Index-sequential
 - Random
- Describe **in detail** EACH of these organisational methods, include how the records are stored, advantages and disadvantages, appropriate methods of access and an example situation where each file-type would be used (each example must be different). [5 each]
- b) Explain the difference between batch processing and real time processing. Give an example of a situation where EACH would be best suited. [5]